5   <u>I claim</u>:

1.   A method of synchronizing an OFDM signal comprising:

receiving an OFDM signal including a plurality of long and short synchronization symbols, wherein at least one symbol includes a plurality of points;

correlating a predetermined number of points in a long symbol of the

10   received OFDM signal against corresponding points in a reference symbol;

obtaining a correlation peak between the received long symbol and the reference symbol, wherein the peak occurs at the time when the receiver acquires symbol synchronization.

15   2.   The method of claim 1 wherein the predetermined number of points is in a range of between 16 and 64 points.

3.   The method of claim 1 further including the step of demodulating the OFDM signal's frequencies into the plurality of points.

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4.   The method of claim 3 wherein the step of demodulating comprises applying a forward FFT to the signal, and the plurality of points applied to the forward FFT are points in a time sequence which is generated by applying an inverse FFT to the amplitudes of the plurality of subcarriers.

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5.   The method of claim 1 wherein the step of correlating includes multiplying each point of the long symbol by the corresponding points to obtain a respective number of multiplication products.

6.   The method of claim 5 wherein the step of obtaining a correlation peak comprises adding all the multiplication products into a correlation signal.

7.   A computer usable medium having computer readable program code embodied therein for causing synchronization of an OFDM signal, the computer readable program code into a computer program product comprising:

    instructions for receiving an OFDM signal including a plurality of long and short synchronization symbols, wherein each symbol includes a plurality of points;

    instructions for correlating a predetermined number of points in a long symbol of the received OFDM signal against corresponding points in a reference symbol;

    instructions for obtaining a correlation peak between the received long symbol and the reference symbol, wherein the peak occurs at the time when the receiver acquires clock synchronization.

8.   The computer program product of claim 7 wherein the predetermined number of points is in a range of between 16 and 64 points.

9.   The computer program product of claim 7 further including instructions for demodulating the OFDM signal's frequencies into the plurality of points.

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10. The computer program product of claim 9 wherein the instructions for demodulating comprise instructions for applying an inverse Fast Fourier Transform to the signal, and the plurality of points are time sequences of the frequencies.

10   11. The computer program product of claim 7 wherein the instructions for correlating include instructions for multiplying each point of the long symbol by the corresponding points to obtain a respective number of multiplication products.

12. The computer program product of claim 11 wherein the instructions for
15   obtaining a correlation peak comprise instructions for adding all the multiplication products into a correlation signal.

13. A receiver component for synchronizing an OFDM signal comprising:

an input for receiving an OFDM signal including a plurality of long and
20   short synchronization symbols, wherein each symbol includes a plurality of points;

a correlator for correlating a predetermined number of points in a long symbol of the received OFDM signal against corresponding points in a reference symbol; and

a peak detector for obtaining a correlation peak between the received long
25   symbol and the reference symbol, wherein the peak occurs at the time when the receiver acquires clock synchronization.

5   14.   The receiver component of claim 13 wherein the predetermined number of points is in a range of between 16 and 64 points.

       15.   The receiver component of claim 13 further including means for demodulating the OFDM signal's frequencies into the plurality of points.

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       16.   The receiver component of claim 15 wherein the means for demodulating comprises means for applying a forward FFT to the signal, and the plurality of points applied to the forward FFT are points in a time sequence which is generated by means for applying an inverse FFT to the amplitudes of the plurality of subcarriers.

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       17.   The receiver component of claim 13 wherein the correlator includes means for multiplying each point of the long symbol by the corresponding points to obtain a respective number of multiplication products.

20   18.   The receiver component of claim 17 wherein the step of obtaining a correlation peak comprises means for adding all the multiplication products into a correlation signal.

       19.   The receiver component of claim 13 wherein the receiver component

25   comprises at least one of: an application-specific integrated circuit; a digital signal processor; and a hardware description of an algorithm.

5   20.   An apparatus for causing synchronization of an OFDM signal comprising:

means for receiving an OFDM signal including a plurality of long and short synchronization symbols, wherein each symbol includes a plurality of points;

means for correlating a predetermined number of points in a long symbol of the received OFDM signal against corresponding points in a reference symbol;

10   means for obtaining a correlation peak between the received long symbol and the reference symbol, wherein the peak occurs at the time when the receiver acquires clock synchronization.

21.   The apparatus of claim 20 wherein the predetermined number of points is

15   in a range of between 16 and 64 points.

22.   The apparatus of claim 20 further including means for demodulating the OFDM signal's frequencies into the plurality of points.

20   23.   The apparatus of claim 22 wherein the means for demodulating comprises means for applying an inverse Fast Fourier Transform to the signal, and the plurality of points are time sequences of the frequencies.

24.   The apparatus of claim 20 wherein the means for correlating include

25   means for multiplying each point of the long symbol by the corresponding points to obtain a respective number of multiplication products.

5   25.   The apparatus of claim 24 wherein the means for obtaining a correlation

peak comprises means for adding all the multiplication products into a correlation signal.